Mainboard User's Manual

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Chapter 1
INTRODUCTION

This main board is a high performance system hardware based on Intel Pentium processor and is equipped with three master PCI slots, four 16-bit ISA slot, two serial ports with 16550 high speed, one parallel with ECP/EPP bi-direction, one PS/2 Mouse port, one infrared port (IR), dual enhanced PCI IDE ports for 4 IDE device mode 5 and DMA mode 2, one FDD port. The dimension is 22*22.6 cm.

Features:

☞ **CPU ZIF Socket**
- ZIF 321-pin ZIF socket. Socket 7.
- Intel Pentium 90, 100, 120, 133, 150, 166, 180, and 200MHz.
- Intel Pentium-MMX 166/200/233 MHZ
- Switch Voltage Regulator for P55C
- Cyrix M1 P120+/P133+/P150+/P166+/CYRIX M2(MMX)
- AMD K5 /K6 (MMX) CPU

☞ **Chipset**
- Main board: Intel 430TX chipset
- Enhanced I/O:ALI M5135 for 2.88MB FDD, Enhanced I/O. 16550/ECP/EPP bi-direction and the Infrared port (IR)

☞ **Memory, SIMM 1-4,DIMMx2**
- The RAM MODULE assortment is flexible. There are two 168 pin DIMM sockets and four 72 pin SIMM sockets on the motherboard. You can use 3.3V SDRAM and 5V EDO RAM on the 168 pin DIMM socket of the motherboard. The total capacity is up to 256MB. Otherwise, you can use 5V EDO RAM and FPM RAM on the 72 pin SIMM socket of the motherboard. The total capacity is up to 256MB. Please notice that you can't use the SIMM RAM MODULE and DIMM RAM MODULE at the same time.

☞ **Pipe Line Cache**
- 64 bit Cache.
- Implements level two (L2), external cache write through or write-back design, featuring two pipe line sram onboard.
- External cache size is on board 256K or 512K Cache RAM.

☞ **Expansion Slots, ISA1-ISA4,PCI1-PCI4**

- Builds three 16-bit ISA slots and four 32-bit PCI slots (PCI 1 to PCI 4)

☞**Enhanced PCI IDE & ISA I/O**
- Built in enhanced PCI Local Bus IDE controller.
- Ultra DMA/33 Support BUS master IDE
- Supports 4 PCI IDE devices.　PIO Mode 5 and DMA Mode 2 and CDROM driver.　BIOS auto detects HDD.
- Two serial ports with 16550, Infrared port (IR), one Parallel port with ECP/EPP pocket device, bi-dirction, one PS/2 mouse port, two FDD. Through ECP/EPP, the board increases the performance of printer or connect SCSI or IDE devices.
- Controlled by BIOS.　Disable I/O function by BIOS in order to Install an I/O card.　Set COM 1 and COM 2 as COM 3 and COM 4 by BIOS.
- Six cables in package.

☞**System Green BIOS**
- Flash BIOS option on board, AWARD deep green BIOS, PLUG & PLAY, PnP function.
- Auto configuration for PCI add-on cards.
- CPU stop-clock, real zero clock for CPU.
- I/O Device's power saving, APM & SMI.
- Implements the EPA Energy Star PC specification with Deep Green system design.

    # Full-on : System runs in full speed CPU clock.
    # Doze   : System scales-down CPU clock.
    # Standby : System scales-down the CPU clock, and turns off video display, and spin-off hard disk driver.
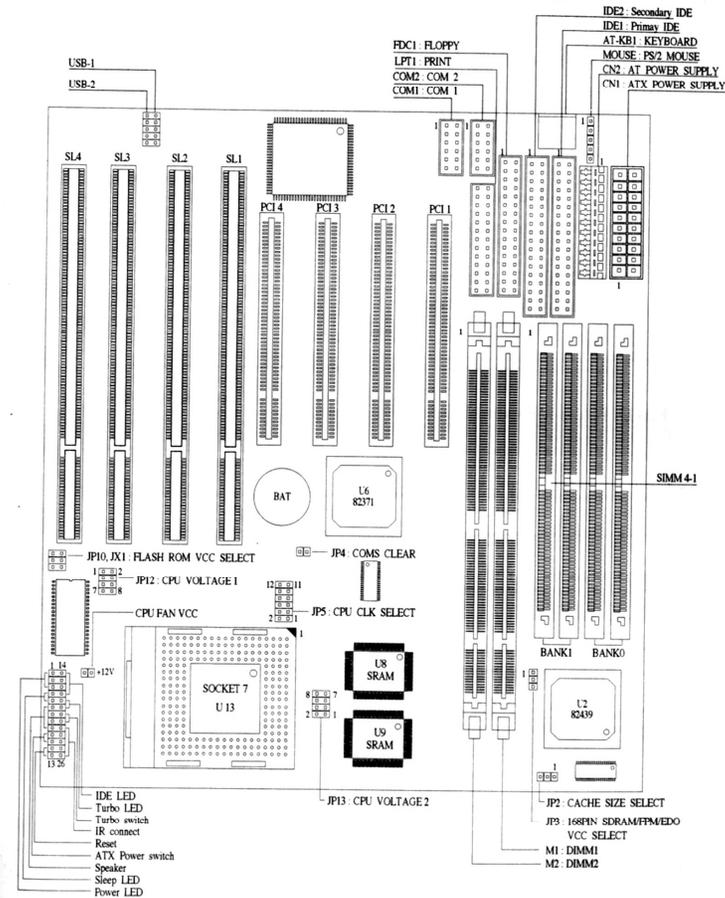   # Suspend : With SMM CPU, stop CPU clock in suspend mode.

☞**ACPI (ATX Power Supply Mode)**
- power management.　Soft-off Control
- Support Modem Ring-in
- RTC Alarm wake up

☞ **Power Connect**
- AT/ATX option

2

2.1 Connectors & Jumpers

3

FRONT1(10-11): ATX POWER / Sleep & Resume Switch Connect

一、AT POWER MODE : This connect for Sleep & Resume Switch Connect

二、ATX POWER MODE: 1. Under WIN95 this connect for Sleep & Resume Switch Connect

    2. Under MS-DOS this connect for ATX POWER SWITCH

    3. This item allows you to select Delay 4 sec or Instant-off. Please refer section 3-6 relating "Soft-off By PWR-BTTN"

FRONT1(12-13): RESET Switch Connect

RONT1(14-17): Hard Disk LED Connect

PINOUT	ASSIGNMENTS
1	VCC
2	LED1 Signal
3	LED2 Signal
4	VCC

FRONT1(18-19): Turbo LED connect

PINOUT	ASSIGNMENTS
1	VCC
2	LED1 Signal

FRONT1(20-21): Turbo switch connect (Default close)

FRONT1(22-26): IR connect

PINOUT	ASSIGNMENTS
1	VCC
2	FIRRX Signal
3	IRRX2 Signal
4	GND
5	IRTX2 Signal

JP2: CACHE SIZE SELECT. Please refer section 2-6 relating

JP3: FOR 168 PIN SDRAM (Synchronous DRAM) OR FPM/EDO DRAM Voltage SELECT

JP3	Function	
1-2	+5V	FPM/EDO
2-3	+3.3V	SDRAM

FRONT1: Power LED, Speaker, SLEEP LED, ATX POWER SWITCH, Reset, Hard disk LED, Turbo LED, Turbo Switch, IR connect

	PIN		
Power LED	1	14	Hard Disk LED
	2	15	
	3	16	
Sleep LED	4	17	Turbo LED
	5	18	
	6	19	
Speaker	7	20	Turbo switch
	8	21	
	9	22	IR connect
ATX POWER /Sleep & Resume Switch Connect	10	23	
	11	24	
RESET	12	25	
	13	26	

FRONT1(1-3): Power LED & Keylock connect

PINOUT	ASSIGNMENTS
1	LED OUTPUT
2	NC
3	GND

FRONT1(4-5): SLEEP LED Connect

PINOUT	ASSIGNMENTS
1	LED OUTPUT
2	HIGH

FRONT1(6-9): Speaker Connect

PINOUT	ASSIGNMENTS
1	speaker output
2	GND
3	GND
4	VCC

JP4: COMS CLEAR SETTING

JP4	Function
OPEN	NORMAL
CLOSE	CMOS CLEAR

JP5: CPU CLK SELECT.   Please refer section 2-4 relating

JP8: FAN power

GND	+12V

JP10,JX1: Flash ROM VCC Select

JP10,JX1		Function	
1-2	1-2	+12V	VPP
2-3	2-3	+5V	VPP

JP12,JP13: CPU Voltage Jumper setting.   Please refer section 2-3 relating

MOUSE1: PS/2 MOUSE CONNECT

PINOUT	ASSIGNMENTS
1	MDATA
2	N.C
3	GND
4	VCC
5	MSCLK

AT-KB1: AT KEYBOARD
IDE1: Primary IDE CONNECT
IDE2: Secondary IDE CONNECT
FDC1: Floppy CONNECT
COM1: COM1 CONNECT
COM2: COM2 CONNECT
LPT1: PRINT CONNECT

USB-1: USB-1 connect

PINOUT	ASSIGNMENTS
1	VCC
2	USBP0-
3	USBP0+
4	GND_A
5	GND_B

USB-2: USB-2 connect

PINOUT	ASSIGNMENTS
1	VCC
2	USBP1-
3	USBP1+
4	GND_A
5	GND_B

2.2 Install The System CPU Processor
Install 586 CPU on the ZIF Socket 7

✧ Locate the 321-pin ZIF Socket.

✧ Raise the ZIF Socket retaining arm to the open position.   Pin Coordinates A-1 will be the arm corner.

✧ Position the notched corner of microprocessor over the notched corner of the ZIF Socket and align the pins of CPU over the Socket.

✧ Carefully insert the aligned CPU into the ZIF Socket and press Firmly.   After CPU inserted, press ZIF retaining arm downwards.

✧ Examine the installed CPU to ensure it is install in the correct direction and pin aligned properly.

2.3 Set CPU Voltage

CPU POWER MODE	JP12 CONNECT	JP13 CONNECT	Example
ONLY 3.52V	1 2 / 3 4 / 5 6 / 7 8	8 7 / 6 5 / 4 3 / 2 1	AMD-K5 Cyrix M1
ONLY 3.3V	1 2 / 3 4 / 5 6 / 7 8	8 7 / 6 5 / 4 3 / 2 1	INTEL PENTIUM
Dual 3.2V & 3.3V	1 2 / 3 4 / 5 6 / 7 8	8 7 / 6 5 / 4 3 / 2 1	AMD K6 PR-233MHZ
Dual 3.1V & 3.3V	1 2 / 3 4 / 5 6 / 7 8	8 7 / 6 5 / 4 3 / 2 1	FOR Future CPU
Dual 2.9V & 3.3V	1 2 / 3 4 / 5 6 / 7 8	8 7 / 6 5 / 4 3 / 2 1	AMD K6 & Cyrix M2
Dual 2.8V & 3.3V	1 2 / 3 4 / 5 6 / 7 8	8 7 / 6 5 / 4 3 / 2 1	IBM 6X86L INTEL PENTIUM MMX
Dual 2.5V & 3.3V	1 2 / 3 4 / 5 6 / 7 8	8 7 / 6 5 / 4 3 / 2 1	FOR Future CPU
Dual 2.1V & 3.3V	1 2 / 3 4 / 5 6 / 7 8	8 7 / 6 5 / 4 3 / 2 1	FOR Future CPU

2.4 INSTALL 586 CPU
2.4-1 QUICK to Setting for INTEL PENTIUM MMX/AMD K6 MMX /CYRIX M2 MMX CLK & Voltage

A. INTEL PENTIUM MMX
(1) CPU CLK

Product Name	CPU Speed (MHZ)	BUS CLK (MHZ)	JP5 CONNECT	Multiplier
PENTIUM-MMX-166	166	66	12 11 / 10 9 / 8 7 / 6 5 / 4 3 / 2 1	2.5X
PENTIUM-MMX-200	200	66	12 11 / 10 9 / 8 7 / 6 5 / 4 3 / 2 1	3X
PENTIUM-MMX-233	233	66	12 11 / 10 9 / 8 7 / 6 5 / 4 3 / 2 1	3.5X
PENTIUM-MMX-266	266	66	12 11 / 10 9 / 8 7 / 6 5 / 4 3 / 2 1	4X

(2) SET CPU Voltage

CPU Power Type/Jumper	JP12 CONNECT	JP13 CONNECT
DUAL 2.8V & 3.3V	1 2 / 3 4 / 5 6 / 7 8	8 7 / 6 5 / 4 3 / 2 1

B. AMD K6 MMX
(1) CPU CLK

Product Name	CPU Speed (MHZ)	BUS CLK (MHZ)	JP5 CONNECT	Multiplier
AMD-K6-166	166	66	12 11 / 10 9 / 8 7 / 6 5 / 4 3 / 2 1	2.5X
AMD-K6-200	200	66	12 11 / 10 9 / 8 7 / 6 5 / 4 3 / 2 1	3X
AMD-K6-233	233	66	12 11 / 10 9 / 8 7 / 6 5 / 4 3 / 2 1	3.5X
AMD-K6-266	266	66	12 11 / 10 9 / 8 7 / 6 5 / 4 3 / 2 1	4X

(2) SET CPU Voltage

CPU Type	CPU Power Type/Jumper	JP12 CONNECT	JP13 CONNECT
AMD-K6-166/200	DUAL 2.9V & 3.3V	1 2 / 3 4 / 5 6 / 7 8	8 7 / 6 5 / 4 3 / 2 1
AMD-K6-233/266	DUAL 3.2V & 3.3V	1 2 / 3 4 / 5 6 / 7 8	8 7 / 6 5 / 4 3 / 2 1

C. CYRIX M2 MMX
(1) CPU CLK

Product Name	CPU Speed (MHZ)	BUS CLK (MHZ)	JP5 CONNECT	Multiplier
CYRIX-M2-PR166	150	60	12 11 / 10 9 / 8 7 / 6 5 / 4 3 / 2 1	2.5X
CYRIX-M2-PR200	166	66	12 11 / 10 9 / 8 7 / 6 5 / 4 3 / 2 1	2.5X
CYRIX-M2-PR233	200	66	12 11 / 10 9 / 8 7 / 6 5 / 4 3 / 2 1	3X
CYRIX-M2-PR266	233	66	12 11 / 10 9 / 8 7 / 6 5 / 4 3 / 2 1	3.5X

(2) SET CPU Voltage

CPU Type	CPU Power Type/Jumper	JP12 CONNECT	JP13 CONNECT
CYRIX-M2-PR166 /PR200/PR233 /PR266	DUAL 2.9V & 3.3V	1 2 / 3 4 / 5 6 / 7 8	8 7 / 6 5 / 4 3 / 2 1

2.4-2 QUICK to Setting for INTEL PENTIUM & AMD K5 CPU CLK & Voltage

CPU CLK

Product Name	CPU Speed (MHZ)	BUS CLK (MHZ)	JP5 CONNECT	Multiplier
PENTIUM-90/ AMD-K5-PR90/ AMD-K5-PR120	90	60		1.5X
PENTIUM-100/ AMD-K5-PR100/ AMD-K5-PR133	100	66		1.5X
PENTIUM-120/ AMD-K5-PR150	120	60		2X
PENTIUM-133	133	66		2X
PENTIUM-150	150	60		2.5X
PENTIUM-166/ AMD-K5-PR166	166	66		2.5X

Product Name	CPU Speed (MHZ)	BUS CLK (MHZ)	JP5 CONNECT	Multiplier
PENTIUM-180	180	60		3X
PENTIUM-200	200	66		3X

2.4-3 QUICK to Setting for CYRIX 6X86 CPU CLK & Voltage

CPU CLK

Product Name	CPU Speed (MHZ)	BUS CLK (MHZ)	JP5 CONNECT	Multiplier
6X86-P133+GP	110	55	12 11 / 10 9 / 8 7 / 6 5 / 4 3 / 2 1	2X
6X86-P150+GP	120	60	12 11 / 10 9 / 8 7 / 6 5 / 4 3 / 2 1	2X
6X86-P166+GP	133	66	12 11 / 10 9 / 8 7 / 6 5 / 4 3 / 2 1	2X
6X86-P200+GP (Reserved)	150	75	12 11 / 10 9 / 8 7 / 6 5 / 4 3 / 2 1	2X

➤CYRIX 6X86 CPUs have various operating voltage from 3.3V, 3.52V and [3.3V (I/O), 2.8V (Core)] and [3.52V (I/O), 2.8V (Core)]. Please refer CYRIX 6X86 CPU databooks.

➤INTEL CHIPSET CLOCK

Warning: the frequency spec. of intel chipset bus clock is setted as 66 MHZ. When you set the frequency of Chipset over 66 MHZ. We don't promise the over 66 MHZ setting could keep the system continue to work stable.

2.5 PCB Layout and Relevant Positions for CLK & Voltage
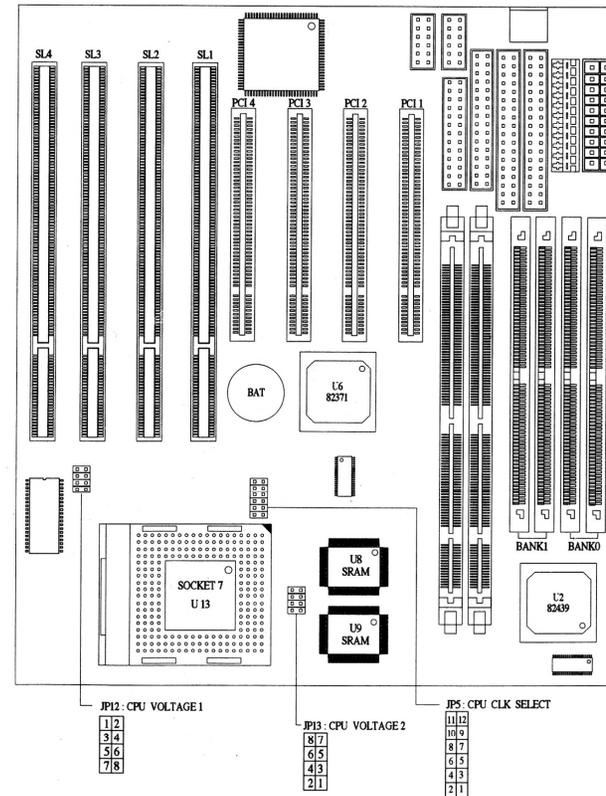
2.6 Cache Memory Installation and Jumper Setting

The main board accpet for 256k or 512k of pipeline sram for cache memory support.

(1) ON BORAD 256K or 512K Cache, Location at U8,U9

TYPE	TAG RAM U1	JP2 CONNECTOR
256K	32K*8	3 2 1
512K	32K*8	3 2 1

(2) PCB Layout and Relevant Position for Cache Memory

SL4 SL3 SL2 SL1

PCI 4   PCI 3   PCI 2   PCI 1

BAT

U6 82371

SOCKET 7 U 13

U8 SRAM

U9 SRAM

BANK1   BANK0

U2 82439

TAG RAM U1

JP2 : CACHE SIZE SELECT

U8, U9 ON BOABD PIPEL BURST SRAM 256K OR 512K

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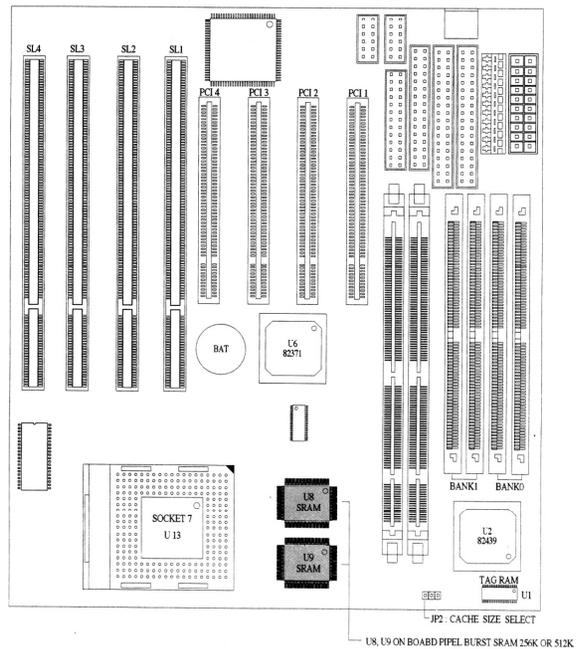
2.7 Support SDRAM use 168-pin DIMMx2

(1)PCB Layout and Relevant Position for SDRAM
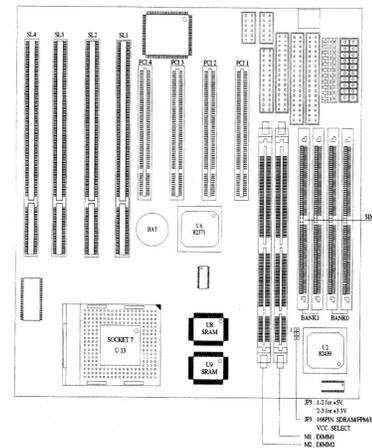
(2)The supports different type of settings for the system memory.   There is no jumper nor connector needed for memory configuration.   Following figures provides all possible memory cominations.

DIMM2 DIMM1

SIMM4   SIMM3 SIMM2   SIMM1

BANK2&3 BANK0&1

BANK2&3   BANK0&1

3v synchronous or
5v FP/EDO DRAM   5V FP/EDO DRAM

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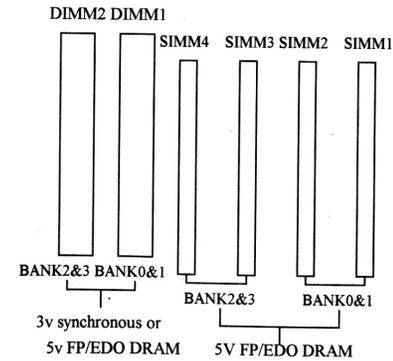
FPM/EDO DRAM		SDRAM		
BANK0&1	BANK2&3	BANK0&1	BANK2&3	STATUS
SIMM1,2	SIMM3,4	M1	M2	
INSTALLED	NONE	NONE	NONE	OK
NONE	INSTALLED	NONE	NONE	OK
NONE	NONE	INSTALLED	NONE	OK
NONE	NONE	NONE	INSTALLED	OK
INSTALLED	INSTALLED	NONE	NONE	OK
NONE	NONE	INSTALLED	INSTALLED	OK

NOTE:
1. Supports both Fast Page DRAM and EDO DRAM SIMMs, but they can not be mixed in the same memory bank.
2. SDRAM Module Specification:
   3.3V ONLY.
3. Support 168pin DIMMx2 for SDRAM / FPM /EDO.

JP3: FOR 168 PIN SDRAM (Synchronous DRAM) OR FPM/EDO DRAM Voltage SELECT.

JP3	Function	
1-2,1-2	+5V	EDO / FPM
2-3,2-3	+3.3V	SDRAM

3.1 Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

ROM PCI/ISA BIOS (2A5KFF99)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PNP/PCI CONFIGURATION SETUP	HDD LOW LEVEL FORMAT
LOAD BIOS DEFAULTS	SAVE & EXIT SETUP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING
Esc : Quit	↑↓→← : Select Item
	(Shift) F2 : Color
Time, Date,	Hard Disk Type...

Note that a brief description of each highlighted selection appears at the bottom of the screen.

Setup Items
The main menu includes the following main setup categories. Recall that some systems may not include all entries.

Standard CMOS Setup
This setup page includes all the items in a standard, AT-compatible BIOS.

BIOS Features
This setup page includes all the items of Award special enhanced features.

Super/User Password Setting

Change, set, or disable password. It allows you to limit access to the system and Setup, or just to Setup.

Chipset Features Setup

This setup page includes all the items of chipset special features.

Power Management Setup

This entry only appears if your system supports Power Management, "Green PC", standards.

PNP/PCI Configuration Setup

This entry appears if your system supports PNP/PCI.

Load BIOS Defaults

The BIOS defaults have been set by the manufacturer and represent settings which provide the minimum requirements for your system to operate.

Load Setup Defaults

The chipset defaults are settings which provide for maximum system performance. While Award has designed the custom BIOS to maximize performance, the manufacturer has the right to change these defaults to meet their needs.

Integrated Peripherals

This section page includes all the items of IDE hard drive and Programmed Input/Output features.

IDE HDD Auto Detection

Automatically detect and configure hard disk parameters. The Award BIOS includes this ability in the event you are uncertain of your hard disk's parameters.

HDD Low Level Format

If supported by your system, this provides a hard disk low level format utility.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Save

Abandon all CMOS value changes and exit setup.

3.2 Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

ROM PCI/ISA BIOS
STANDARD CMOS SETUP
AWARD SOFTWARE. INC.

Date (mm:dd:yy) : Fri, Dec 6 1996
Time (hh:mm:ss) : 15 : 40 : 00

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDE	SECTOR	MODE
Primary Master :	Auto	0	0	0	0	0	0	Auto
Primary Slave :	Auto	0	0	0	0	0	0	Auto
Secondary Master :	Auto	0	0	0	0	0	0	Auto
Secondary Slave :	Auto	0	0	0	0	0	0	Auto

Drive A : 1.44M, 3.5in
Drive B : None
Floppy 3 Mode Support : Disabled

Video : EGA/VGA
Halt On : All Errors

Base Memory : 640K
Extended Memory : 15360 K
Other Memory : 384K
Total Memory : 16384K

ESC : Quit   ↑↓→← : Select Item   PU/PD/+/- : Modify
F1 : Help   (Shift) F2 : Change Color

Date

The date format is <day>, <date> <month> <year>. Press<F3> to show the calendar.

day	The day, from Sun to Sat, determined by the BIOS and is display-only
date	The date, from 1 to 31 (or the maximum allowed in the month)
month	The month, Jan through Dec.
year	The year, from 1900 through 2099

Time

The time format is <hour><minute><second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00

Daylight saving

The category adds one hour to the clock when daylight-saving time begins. It also subtracts one hour when standard time returns.

Enabled	Enable daylight-saving
Disabled	Disable daylight-saving

Primary Master/Primary Slave/Secondary Master/ Secondary Slave

The categories identify the types of 2 channels that have been installed in the computer. There are 45 predefined types and 4 user definable types are for Enhanced IDE BIOS. Type 1 to Type 45 are predefined. Type user is user-definable.

Press PgUp or PgDn to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use Type "User" to define your own drive type manually.

If you select Type "User", you will need to know the information listed below. Enter the information directly from the keyboard and press <Enter>. This information should be included in the documentation from your hard disk vendor or the system manufacturer.

If the controller of HDD interface is ESDI, the selection shall be "Type 1".

If the controller of HDD interface is SCSI, the selection shall be "None".

If you select Type "Auto", BIOS will Auto-Detect the HDD & CD-ROM Drive at the POST stage and showing the IDE for HDD & CD-ROM Drive.

TYPE	drive type
CYLS.	number of cylinders
HEADS	number of heads
PRECOMP	write precom
LANDZONE	landing zone
SECTORS	number of sectors
MODE	mode type

If a hard disk has not been installed select NONE and press <Enter>.

Drive A Type / Drive B Type

The category identifies the types of floppy disk drive A or drive B that have been installed in the computer.

None	No floppy drive installed
360K, 5.25 in	5-1/4 inch PC-type standard drive; 360 kilobyte capacity
1.2M, 5.25 in	5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity
720K, 3.5 in	3-1/2 inch double-sided drive; 720 kilobyte capacity
1.44M, 3.5 in	3-1/2 inch double-sided drive; 1.44 megabyte capacity
2.88M, 3.5 in	3-1/2 inch double-sided drive; 2.88 megabyte capacity

Video

The category selects the type of video adapter used for the primary system monitor. Although secondary monitors are supported, you do not have to select the type in Setup.

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, SVGA or PGA monitor adapters.
CGA 40	Color Graphics Adapter, power up in 40 column mode
CGA 80	Color Graphics Adapter, power up in 80 column mode
MONO	Monochrome adapter, includes high resolution monochrome adapters

Error Halt

The category determines whether the computer will stop if an error is detected during power up.

No errors	Whenever the BIOS detects a non-fatal error the system will be stopped and you will be prompted.
All errors	The system boot will not be stopped for any error that may be detected.
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for all other errors.

Memory

The category is display-only which is determined by POST (Power On Self Test) of the BIOS.

Base Memory

The POST will determine the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the motherboard, or 640K for systems with 640K or more memory installed on the motherboard.

Extended Memory

The BIOS determines how much extended memory is present during the POST. This is the amount of memory located above 1MB in the CPU's memory address map.

Other Memory

This refers to the memory located in the 640K to 1024K address space. This is memory that can be used for different applications. DOS uses this area to load device drivers in an effort to keep as much base memory free for application programs. The BICS is the most frequent user of this RAM area since this is where it shadows RAM.

3.3 BIOS Features Setup

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

ROM PCI/ISA BIOS
BIOS FEATURES SETUP
AWARD SOFTWARE. INC.

Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
External Cache	: Enabled	CC000-CFFFF Shadow	: Disabled
Quick Power On Self Test	: Enabled	D0000-D3FFF Shadow	: Disabled
Boot Sequence	: C, A	D4000-D7FFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	D8000-DBFFF Shadow	: Disabled
Boot Up Floppy Seek	: Disabled	DC000-DFFFF Shadow	: Disabled
Boot Up Numlock Status	: On		
Boot Up System Speed	: High		
Gate A20 Option	: Fast		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250	ESC : Quit	↑↓→← : Select Item
Security Option	: Setup	F1 : Help	PU/PD/+/- : Modify
PS/2 mouse function control	: Enabled	F5 : Old Values	(Shift) F2 : Color
PCI/VGA Palett Snoop	: Disabled	F6 : Load BIOS Defaults	
OS Select For DRAM > 64MB	: Non-OS2	F7 : Load Setup Defaults	

Virus Warning

When this item is enabled, the Award BIOS will monitor the boot sector and partition table of the hard disk drive for any attempt at modification. If an attempt is made, the BIOS will halt the system and the following error message will appear. Afterwards, if necessary, you will be able to run an antivirus program to locate and remove the problem before any damage is done.

!WARNING!

Disk boot sector is to be modified

Type "Y" to accept write or "N" to abort write

Award Software, Inc.

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

NOTE:

Many disk diagnostic programs which attempt to access the boot sector table can cause the above warning message. If you will be running such a program, we recommend that you first disable Virus Protection beforehand.

CPU Internal Cache / External Cache

These two categories speed up memory access. However, it depends on CPU/chipset design. The default value is enable.

Enabled	Enable cache
Disabled	Disable cache

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

Enabled	Enable quick POST
Disabled	Normal POST

Boot Sequence

This category determines which drive to search first for the disk operating system (i.e., DOS). Default value is A, C.

C,A	System will first search for hard disk drive then floppy disk drive.
A,C	System will first search for floppy disk drive then hard disk drive.
CDROM, C,A	System will first search for CDROM drive, then hard disk drive and then floppy disk drive.
C, CDROM, A	System will first search for hard disk drive, then CDROM drive, and then floppy disk drive.

Swap Floppy Drive

This item allows you to determine whether enable the swap floppy drive or not.

The choice: Enabled/Disabled.

Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 760K, 1.2M and 1.44M are all 80 tracks.

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360K.

Boot Up NumLock Status

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on.

On	Keypad is number keys
Off	Keypad is arrow keys

Boot Up System Speed

Selects the default system speed -- the normal operating speed at power up.

High	Set the speed to high
Low	Set the speed to low

Gate A20 Option

This entry allows you to select how the gate A20 is handled. The gate A20 is a device used to address memory above 1 Mbytes. Initially, the gate A20 was handled via a pin on the keyboard. Today, while keyboards still provide this support, it is more common, and much faster, for the system chipset to provide support for gate A20.

Normal	keyboard
Fast	chipset

Typematic Rate Setting

This determines if the typematic rate is to be used. When disabled, continually holding down a key on your keyboard will generate only one instance. In other words, the BIOS will only report that the key is down. When the typematic rate is enabled, the BIOS will report as before, but it will then wait a moment, and, if the key is still down, it will begin the report that the key has been depressed repeatedly. For example, you would use such a feature to accelerate cursor movements with the arrow keys.

Enabled	Enable typematic rate
Disabled	Disable typematic rate

Typematic Rate (Chars/Sec)

When the typematic rate is enabled, this selection allows you select the rate at which the keys are accelerated.

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

Typematic Delay (Msec)

When the typematic rate is enabled, this selection allows you to select the delay between when the key was first depressed and when the acceleration begins.

250	250 msec
500	500 msec
750	750 msec
1000	1000 msec

Security Option

This category allows you to limit access to the system and Setup, or just to Setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

Note: To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

OS Select for DRAM > 64

This item allows you to access the memory that over 64MB in OS/2.

The choice: Non-OS2, OS2.

PCI / VGA Palette Snoop

It determines whether the MPEG ISA/VESA VGA Cards can work with PCI/VGA or not.

Enabled	When PCI/VGA working with MPEG ISA/VESA VGA Card.
Disabled	When PCI/VGA not working with MPEG ISA/VESA VGA Card.

Video BIOS Shadow

Determines whether video BIOS will be copied to RAM. However, it is optional depending on chipset design. Video Shadow will increase the video speed.

Enabled	Video shadow is enabled
Disabled	Video shadow is disabled

C8000 - CBFFF Shadow/DC000 - DFFFF Shadow

These categories determine whether option ROMs will be copied to RAM. An example of such option ROM would be support of on-board SCSI.

Enabled	Optional shadow is enabled
Disabled	Optional shadow is disabled

3.4 Supervisor/User Password Setting

You can set either supervisor or user password, or both of then. The differences between are:

supervisor password : can enter and change the options of the setup menus.
user password : just can enter but do not have the right to change the options of the setup menus.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disabled a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED.

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 4). If the Security option is set to "System", the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

3.5 Setup/Integrated Peripherals Features Setup

ROM PCI/ISA BIOS
CHIPSET FEATURES SETUP
AWARD SOFTWARE. INC.

Auto Configuration	: Enabled	DRAM Refresh Rate : 15 us	
DRAM Timing	: 70ns	POWER-Supply Type : AT	
DRAM Leadoff Timing	: 10/6/4		
DRAM Read Burst (EDO/FP)	: X333/X444		
DRAM Write Burst Timing	: X444		
Fast EDO Lead off	: Disabled		
Refresh RAS# Assertion	: 5 Clks		
Fast RAS TO CAS Delay	: 3		
DRAM Page Idel Timer	: 2 Clks		
DRAM Enhanced Paging	: Enabled		
Fast MA TO RAS# Delay	: 2 Clks		
SDRAM (CAS Lat/RAS-TO-CAS)	: 3/3		
SDRAM Speculative Read	: Disabled		
System BIOS Cacheable	: Disabled		
Video BIOS Cacheable	: Disabled	ESC : Quit	↑↓→← : Select Item
8 Bit I/O Recovery Time	: 1	F1 : Help	PU/PD/+/- : Modify
16 Bit I/O Recovery Time	: 2	F5 : Old Values	(Shift) F2 : Color
Memory Hole At 15M-16M	: Disabled	F6 : Load BIOS Defaults	
PCI 2.1 Compliance	: Disabled	F7 : Load Setup Defaults	

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

DRAM Settings

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system had mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

Auto Configuration
Pre-defined values for DRAM, cache.. timing according to CPU type & system clock.

The Choice: Enabled, Disabled.

Note: When this item is enabled, the pre-defined items will becomes SHOW-ONLY.

AT Bus Clock
This item allows you to select 7.16MHZ, CLK2/2, CLK2/3, CLK2/4, CLK2/5, CLK2/6, clocks.   The default is CLK2/4.

Asysc. SRAM Read/Write WS
This item allows you to select x-3-3-3, x-2-2-2.   The default is x-3-3-3.

EDO Read WS
This item allows you to select x-3-3-3, x-2-2-2.   The default is x-3-3-3.

Page Mode Read WS
This item allows you to select x-3-3-3, x-4-4-4.   The default is x-3-3-3.

DRAM Write WS
This item allows you to select x-3-3-3, x-2-2-2.   The default is x-2-2-2.

CPU to DRAM Page Mode
The default is Disabled.

DRAM Refresh Period
This item allows you to select 15us, 30us, 60us, 120us.   The default is 60us.

DRAM Date Integrity Mode
This item allows you to select between two methods of DRAM error checking, ECC and Parity.   The default is Parity.

Pipelined Function
This item allows you to select Disabled, Enabled, Turbo.   The default is Disabled.

16 Bit ISA I/O, Mem Command WS
This item allows you to select Normal, 1 to 3 Wait.   The default is 2 Wait.

Local Memory 15-16M
This item allows you to select Disabled, Enabled.   The default is Enabled.

Passive Release
This item allows you to select Disabled, Enabled.   The default is Enabled.

ISA Line Buffer
This item allows you to select Disabled, Enabled.   The default is Enabled.

Delay Transaction
This item allows you to select Disabled, Enabled.   The default is Enabled.

Primary Frame Buffer
This item allows you to select Disabled. 1,2,4,8,16MB.   The default is 2MB.

VGA Frame Buffer
This item allows you to select Disabled, Enabled.   The default is Enabled.

Linear Merge
This item allows you to select Disabled, Enabled.   The default is Enabled.

Word Merge
This item allows you to select Disabled, Enabled.   The default is Enabled.

Byte Merge
This item allows you to select Disabled, Enabled.   The default is Disabled.

Fast Back-to-Back
The default is Disabled.

PCI Write Burst
This item allows you to select Disabled, Enabled.   The default is Disabled.

M1 Linear Burst Mode
This item allows you to select Disabled, Enabled.   The default is Disabled.

Integrated Peripherals

```
                ROM PCI/ISA BIOS
             INTEGRATED PERIPHERALS
               AWARD SOFTWARE. INC.

IDE HDD Block Mode         : Enabled    Onboard Parallel Port    : 378/IRQ7
IDE Primary Master PIO     : Auto       Parallel Port Mode       : SPP
IDE Primary Slave PIO      : Auto
IDE Secondary Master PIO   : Auto
IDE Secondary Slave PIO    : Auto
IDE Primary Master UMDA    : Auto
IDE Primary Slave UMDA     : Auto
IDE Secondary Master UMDA  : Auto
IDE Secondary Slave UMDA   : Auto
On-Chipad Primaryr PCI IDE : Enabled
On-Chipad Secondary PCI IDE : Enabled
USB Keyboard Support       : Disabled

Onboard FDC Controller     Enabled
Onboard Serial Port1       : Auto    ESC : Quit            ↑↓→← : Select Item
UR1 Mode                   : Normal  F1 : Help             PU/PD/+/- : Modify
                                     F5 : Old Values       (Shift) F2 : Color
Onboard Serial Port2       : Auto    F6 : Load BIOS Defaults
UR2 Mode                   : Normal  F7 : Load Setup Defaults
```

IDE HDD Block Mode

This allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive (HDD).

Enabled	IDE controller uses block mode.
Disabled	IDE controller uses standard mode.

Enabled is the default.

PCI Slot IDE 2nd Channel

This item allows you designate an IDE controller board inserted into one of the physical PCI slots as your secondary IDE controller.

Enabled	External IDE controller designated as the secondary controller
Disabled	No IDE controller occupying a PCI slot.

Enabled is the default.

IDE PIO

IDE hard drive controllers can support up to two separate hard drives. These drives have a master/slave relationship which are determined by the cabling configuration used to attach them to the controller. Your system supports two IDE controllers–a primary and a secondary–so you have to ability to install up to four separate hard disks.

PIO means Programmed Input/Output. Rather than have the BIOS issue a series of commands to effect a transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by themselves. This simpler and more efficient (and faster).

Your system supports five modes, numbered from 0 (default) to 4, which primarily differ in timing. When *Auto* is selected, the BIOS will select the best available mode. This is true for the next four setup items.

1. IDE Primary Master PIO
2. IDE Primary Slave PIO
3. IDE Secondary Master PIO
4. IDE Secondary Slave PIO

On-Chip Primary PCI IDE

As stated above, your system includes two built-in IDE controllers, both of which operate on the PCI bus. This setup item allows you either to enable or disable the primary controller. You might choose to disable the controller if you were to add a higher performance or specialized controller.

Enabled	Primary HDD controller used – Default
Disabled	Primary HDD controller not used.

On-Chip Secondary PCI IDE

As above for the Primary controller, this setup item you either to enable or disable the secondary controller. You might choose to disable the controller if you were to add a higher performance or specialized controller.

Enabled	Primary HDD controller used
Disabled	Primary HDD controller not used.

Enabled is the default

3.6 Setup Power Management

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.

ROM PCI/ISA BIOS
POWER MANAGEMENT SETUP
AWARD SOFTWARE. INC.

Power Management	: User Define	**Reload Global Timing Events**	
PM Control by APM	: Yes	IRQ3 [3-7,9-15],NMI	: Enabled
Video Off Method	: V/H SYNC+Blank	Primay IDE 0	: Disabled
Video Off After	: Standy	Primay IDE 1	: Disabled
		Secondary IDE 0	: Disabled
Doze Mode	: Disabled	Secondary IDE 1	: Disabled
Standby Mode	: Disabled	Floppy Disk	: Disabled
Suspend Mode	: Disabled	Serial Port	: Enabled
HDD Power Down	: Disabled	Parallel Port	: Disabled
Throttle Duty Cycle	: 62.5%		
ZZ Active in Suspend	: Disabled		
VGA Active Monitor	: Disabled		
Soft-off By PWR-BTTN	: Delay 4ses.		
Resume by Ring	: Disabled		
Resume by Alarm	: Disabled		
		ESC : Quit	↑↓→←: Select
		F1 : Help	Item
** Break Event From Suspend**		F5 : Old Values	PU/PD/+/- : Modify
IRQ8 8 Clock Event	: Disabled	F6 : Load BIOS Defaults	(Shift) F2 : Color
		F7 : Load Setup Defaults	

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. Doze Mode
2. Standby Mode
3. Suspend Mode
4. HDD Power Down

There are four selections for Power Management, three of which have fixed mode settings.

Disable (default)	No power management. Disables all four modes
Min. Power Saving	Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management – **ONLY AVAILABLE FOR SL CPU'S.** Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defined	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

PM Control APM

When enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock.

If the Max. Power Saving is not enabled, this will be preset to *No*.

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Initial display power management signaling.

PM Timers

The following four modes are Green PC power saving functions which are only user configurable when User Defined Power Management has been selected. See above for available selections.

Doze Mode

When enabled and after the set time of system inactivity, the CPU clock will run at slower speed while all other devices still operate at full speed.

Standby Mode

When enabled and after the set time of system inactivity, the fixed disk drive and the video would be shut off while all other devices still operate at full speed.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

HDD Power Down

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

Power Down & Resume Events

Power Down and Resume events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything which occurs to a device which is configured as *On*, even when the system is in a power down mode.

As above, the choices are *On* and *Off*. *Off* is the default.

When set *On*, activity will neither prevent the system from going into a power management mode nor awaken it.

- IRQ3 (COM2)
- IRQ4 (COM1)
- IRQ5 (LPT2)
- IRQ6 (Floppy Disk)
- IRQ7 (LPT 1)
- IRQ8 (RTC Alarm)
- IRQ9 (IRQ2 Redir)
- IRQ10 (Reserved)
- IRQ11 (Reserved)
- IRQ12 (Reserved)
- IRQ13 (Coprocessor)
- IRQ14 (Hard Disk)
- IRQ15 (Reserved)

Soft-off By PWR-BTTN   (For ATX POWER ONLY)

This item allows you to select Delay 4 sec or Instant-off.

Resume By Ring   (For ATX POWER ONLY)

This item allows you to select Disabled ,Enabled.
If a Fax Modem was connected with serial ports,
the computer will be awoken when it received a signal from outside.

Resume By Ring, Setup for MS-DOS mode
1. Select Resume By Ring: Enabled
2. Save the Value and Exit. This system will Reboot.
3. Power off your system by pressing the power button on the panel.

Resume By Ring, Setup for WIN95 mode
1. Select Resume By Ring: Enabled
2. Save the Value and Exit. This system will Reboot.
3. When you want leave WIN95 , select Shut down. The powor off by software

Resume By Alarm (For ATX POWER ONLY)

This item allows you to select Disabled ,Enabled.
Which allows the user setting date(Day/Hour/Minute)
in advance for turning on the system with a range in 30 days.
The system will be awoken on the date according to the user' setup.

Resume By Alarm Setup for MS-DOS mode
1. Select Resume By Alarm: Enabled
2. Set the (Day/Hour/Minute) you desire towake up your system
3. Save the Value and Exit. This system will Reboot.
4. Power off your system by pressing the power button on the panel.

Resume By Alarm Setup for win95 mode
1. Select Resume By Alarm: Enabled
2. Set the (Day/Hour/Minute) you desire towake up your system
3. Save the Value and Exit. This system will Reboot.
4. When you want leave WIN95 , select Shut down. The powor off by software

3.7 Setup PnP/PCI Configuration

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

ROM PCI/ISA BIOS
PNP/PCI CONFIUGURATION
AWARD SOFTWARE. INC.

PNP OS Installed	: No	PCI IDE IRQ MAP to	: Disabled
Resources Controlled By	: Manual	Primary IDE INT#	: Level
Resources Configuration Data	: Disable	Secondary IDE INT#	: ISA
IRQ-3 assigned to	: Legacy ISA	Used MEM base addr	: N/A
IRQ-4 assigned to	: Legacy ISA		
IRQ-5 assigned to	: PCI/ISA PnP		
IRQ-7 assigned to	: PCI/ISA PnP		
IRQ-9 assigned to	: PCI/ISA PnP		
IRQ-10 assigned to	: PCI/ISA PnP		
IRQ-11 assigned to	: PCI/ISA PnP		
IRQ-12 assigned to	: PCI/ISA PnP		
IRQ-14 assigned to	: PCI/ISA PnP		
IRQ-15 assigned to	: PCI/ISA PnP		
DMA-0 assigned to	: PCI/ISA PnP		
DMA-1 assigned to	: PCI/ISA PnP	ESC : Quit	↑↓→← : Select Item
DMA-3 assigned to	: PCI/ISA PnP	F1 : Help	PU/PD/+/- : Modify
DMA-5 assigned to	: PCI/ISA PnP	F5 : Old Values	(Shift) F2 : Color
DMA-6 assigned to	: PCI/ISA PnP	F6 : Load BIOS Defaults	
DMA-7 assigned to	: PCI/ISA PnP	F7 : Load Setup Defaults	

Resource Controlled by

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play Operating system such as Windows® 95.
Choices are Auto and Manual (default).

Reset Configuration Data

This item allows you to determine reset the configuration data or not.
Choices are Enabled and Disabled (default).

IRQ3/4/5/7/9/10/11/12/14/15, DMA0/1/3/5/6/7 assigned to

This item allows you to determine the IRQ / DMA assigned to the ISA bus and is not available to any PCI slot.

Choices are *Legacy ISA* and *PCI/ISA PnP*.

PCI IRQ Activated by

This sets the method by which the PCI bus recognizes that an IRQ service is being requested by a device. Under all circumstances, you should retain the default configuration unless advised otherwise by your system's manufacturer.

Choices are *Level* (default) and *Edge*.

PCI IDE IRQ MAP to

This allows you to configure your system to the type of IDE disk controller in use. By default, Setup assumes that your controller is an ISA (Industry Standard Architecture) device rather than a PCI controller. The more apparent difference is the type of slot being used.

If you have equipped your system with a PCI controller, changing this allows you to specify which slot has the controller and which PCI interrupt (A, B, C or D) is associated with the connected hard drives.

Remember that this setting refers to the hard disk drive itself, rather than individual partitions. Since each IDE controller supports two separate hard drives, you can select the INT# for each. Again, you will note that the primary has a lower interrupt than the secondary as described in *"Slot x Using INT#"* above.

Selecting *"PCI Auto"* allows the system to automatically determine how your IDE disk system is configured.